There is a companion shower, often rather strikingly visible at the same time, and its radiant point is about 10 degrees east of the chief system. It apparently shows a similar displacement to the eastwards at the rate of about 1 degree per day.

These showers from Gemini are sometimes extremely active, and on the night of the maximum, about December 11, furnish 20 or 30 meteors per hour for one observer. They have swift flights, not often with conspicuous trains or streaks, and are not recorded so easily and accurately as the meteors from Perseus in August or those from Leo in November.

COMET 1915*d* MELLISH.—Orbital elements for this comet have been calculated by Messrs. S. Einarsson and Alter, of the Berkeley Astronomical Department (Lick Observatory Bulletin, No. 273), from three observations made by Aitken on September 20, 21, and 23 :—

$$T = 1915 \text{ Oct. } 13{\cdot}3959 \text{ G.M.T.}$$
$$\left.\begin{aligned} \omega &= 118^\circ\ 50'\ 30'' \\ \Omega_0 &= 77^\circ\ 42'\ 52'' \\ i &= 53^\circ\ 32'\ 41'' \end{aligned}\right\} 1915{\cdot}0$$
$$\log q = 9{\cdot}64669$$

Elements deduced by Messrs. Braae and Fischer-Petersen were given in this column for October 14. It is pointed out that the orbit plane is nearly the same as that of comet 1915, also discovered by Mellish. In the current number of the *Observatory* Dr. Crommelin states that the elements show a distant resemblance to those of the comet of 1402.

VISIBILITY OF MERCURY.—The last W. elongation (18° 49′) of this planet occurred on November 7, and although only two-thirds of the possible maximum, the planet was seen by Mr. H. E. Goodson from the Hill Observatory, Salcombe Regis, ten days later on the morning of November 17, just before 6.15 a.m., attracting attention as a *conspicuous* naked-eye object, less than 1° above the eastern sky-line in a moderately bright dawn.

THE LIGHT-CURVE OF RZ CASSIOPEIÆ.—A number of minima of this important circumpolar short-period eclipse variable have been followed by Sig. E. Paci, at the Royal Observatory of Catania (*Mem. Soc. Spett. Ital.*, September). The measures were made by means of a Töpfer wedge photometer attached to a Cooke telescope of 15-cm. aperture. The mean light-curve is based on 2274 measures made during eight minima since last July, and the magnitude ranges from 5·9-7·8 in 2h. 45m.

RECENT SCIENTIFIC WORK IN ITALY.

SINCE the outbreak of war in August, 1914, up to the end of May last, when Italy entered into the struggle, the output of scientific work in Italy seems to have suffered but little from the general upheaval which has in other countries so largely disorganised scientific effort. The *Atti* of the Royal Academy of the Lincei, which may be taken as representative of scientific work in general, embracing as it does all the different branches, shows during this period very little falling off from previous years either in the number or quality of the papers published. This may be seen from a brief review of the contributions of general interest published in vol. xxiii., part ii., and vol. xxiv., part i., which cover this period.

Prof. C. Acqua (vol. xxiii., ii., p. 78) has an interesting paper on the artificial absorption of liquids by the aerial parts of plants, in which a description is given of the striking effects produced by allowing living plants to absorb nutritive solutions through the leaves or cut branches. Plants which ordinarily die down in the autumn were in this way kept in leaf throughout the winter by the absorption of saccharose, whilst in other cases plants placed in unsatisfactory conditions of growth, which ordinarily would cause rapid fading, were revived by administering sugar solutions through the leaves or stalks.

Dr. V. Paolini and R. Lomonaco (vol. xxiii., ii., 123) show that the green essential oil obtained from Italian-grown wormwood (*Artemisia absinthium*) contains about 10 per cent. of a mixture of α- and β-thujones, 48 per cent. of thujylic alcohol, either free or in the form of acetic, isovaleric, and palmitic esters, and smaller proportions of phellandrene, cadinene and a blue oil of undetermined composition.

From a study of the effect of very dilute acids on the germination of oats (*Avena sativa*), Prof. R. Pirotta (vol. xxiii., ii., 166) concludes that the anion and kation of the acid have distinct effects, both chemical and biological, on the plant; the hydrogen acts on the root, and the reaction is localised therein, whilst the effect of the anion is localised on the growing points. From a similar study made by Dr. F. Plate on the effect of the chlorides of the alkali metals on germination, it is seen that the chlorides produce very different effects from the corresponding nitrates, the difference being due to the presence of a different anion.

In two papers on the formation of hydrocyanic acid in plants, Prof. C. Ravenna (vol. xxiii., ii., pp. 222 and 302) points out that in the estimation of small quantities of hydrogen cyanide in such cases, it is preferable to use potassium chromate as an indicator in titrating with silver nitrate solution rather than to employ Liebig's or Denigès's method. It is shown by a number of experiments on *Phaseolus lunatus* that this plant on germination at first produces hydrogen cyanide in increasing quantities, but that after a time the amount falls off. This plant, therefore, is no exception to the rule formerly established by the author with regard to the course of formation of hydrogen cyanide by cyanogenetic plants.

Dr. A. Clementi (vol. xxiii., ii., 517 and 612) describes a new method of determining the action of arginase, based on the quantitative estimation, by means of the formaldehyde process, of the new amino-group formed by hydrolysis of the arginine to urea and ornithine. Arginase is shown to be present, not only in the press juice of the liver of mammals, but also in aqueous extracts of these. In a later paper Dr. Clementi (vol. xxiv., i., 352) shows that Sörensen's titration process in presence of formaldehyde can be applied to mono-substituted amino-acids, such as sarcosine; as slight hydrolysis occurs in such cases, it is, however, necessary, in order that the results correspond with the whole of the acid present, that alkali should be added up to the point when an intense red coloration is produced with phenolphthalein.

Dr. Eva Mameli and Prof. G. Pollacci (vol. xxiv., i., 966) deal with the question of the direct assimilation of atmospheric nitrogen by plants. As the result of numerous analyses conducted under a system of rigorous control, it is concluded that the faculty of assimilating nitrogen directly from the air is far more widely distributed among plants than has hitherto been admitted. Nearly all chlorophyll-containing plants, from algæ to phanerogams, can, under special conditions, make use with greater of less activity of the atmospheric nitrogen. This property is most strongly marked in the Hydropteridæ, such as *Azolla carolinianum* and *Salvinia natans*, and in *Lemna major* and *L. minor*, but phanerogams such as *Cucurbita pepo*, *Acer negundo*, and *Polygonum fagopyrum* also possess it.

A series of papers on the metabolism of amino-acids in the organism is contributed by Dr. U. Lombroso and his collaborators (vol. xxiv., i., 148, 475, 863, and 870). Dr. A. Clementi (vol. xxiv., i., 972) has studied the action of proteoclastic enzymes on polypeptides, and (vol. xxiv., i., 55) the introduction of the guanidine nucleus into the molecule of polypeptides and its significance in physiology.

Amongst papers in pure organic chemistry, the following may be mentioned. E. Sernagiotto has studied in detail *carvone camphor*, a substance formed by the isomeric change of carvone when exposed to light in aqueous alcoholic solution. A. Angeli deals with the properties of certain azoxyphenols and of certain aldehydic compounds, V. Paolini and L. Devizia with the isomeric linalools and the resolution of the inactive form into its optically active components. L. Mascarelli and F. Negrisoli describe the resolution of decahydroquinoline into its optical antipodes.

In inorganic chemistry, Dr. G. Ponti describes investigations of the exhalations from Mount Etna; L. Cambi and G. Sperone have studied the properties of calcium amalgam and give measurements of its electromotive force. The electromotive force of magnesium amalgam forms the subject of a separate paper by L. Cambi.

In physics, A. Lo Surdo has studied the electrical field in the Hittorf-Crookes space, and the electrical decomposition of spectral lines. A. Venturi gives measurements of gravity carried out in Sicily in 1910, and U. Cisotti contributes a mathematical study of new types of permanent periodic and rotational waves. G. C. Trabacchi deals with the Hall effect in alloys of tellurium and bismuth, and P. Cardani describes a method of stabilising the action of Röntgen tubes by absorption of the carbon dioxide.

In the biological sciences, B. Grassi deals with phylloxera, G. Tizzoni with the significance of polymorphism in identifying the streptobacillus of pellagra, and R. Perotti with the morphological variation of *Mycoderma vini*.

W. A. D.

PHYSIOLOGY AT THE BRITISH ASSOCIATION.

AFTER the president's address the reports of several research committees were received. Prof. Waller demonstrated a small apparatus he had devised for the convenient administration of known percentages of chloroform. The regulation of the dose is easily effected, and anæsthesia may be safely induced by the patient himself, the mask falling off the face when the patient is sufficiently under chloroform.

In the report of the committee investigating the electromotive phenomena of plants Prof. Waller described an electrical method of testing the vitality of seeds. The size of the electrical response is directly proportional to the amount of vitality. The method is a great improvement upon existing methods, and should prove of commercial value in the testing of seeds.

Prof. Moore gave a paper on the action of light upon certain inorganic and organic substances. He reviewed the action of chlorophyll in photosynthesis, and showed how similar action could be obtained by the use of inorganic salts in place of chlorophyll. Prof. Moore found that acid salts, and especially iron salts, are most effective, the action being greatest when the colloidal surface is at a maximum. Chlorophyll itself is not the essential element in photosynthesis, but the colloidal salts in the chloroplast. Iron salts are abundant in many of the lower plants, and enable these to make use of the action of light.

Dr. T. W. Edridge-Green, in a communication entitled "Some Fundamental Facts of Vision and Colour Vision," attacked the prevalent assumptions that the rods of the retina are percipient elements, and that there are fundamental colour sensations which by their mixture give rise to other colour sensations. He adduced a number of arguments which he considered destructive of these theories.

Dr. T. W. Graham Brown then illustrated by lantern slides the effects of removal of the post-central gyrus of both sides of the brain upon the movements of a chimpanzee. Shortly after operation the chimpanzee was able to swing from the bars of the cage, using either hand with no sign of inco-ordination. A month after operation the animal showed no symptoms, was able to choose the right key from a bunch, insert it in the keyhole, and unlock and open the door of its room.

Prof. Herring described the effects of thyroidectomy and thyroid-feeding upon the adrenin content of the suprarenals. The adrenin was tested by the action of extracts of the suprarenals upon the blood-pressure of pithed cats after the method employed by Elliott. In a further series the amount of adrenin was measured by Folin's colorimetric process, and expressed in amount per kilo. body-weight. Thyroidectomy reduced the adrenin content considerably, but, when compared with the adrenin content of control animals similarly operated on except for the thyroids being left, it was found there was little difference. In animals which tolerate thyroidectomy, *e.g.* rabbits, there was little difference between the adrenin contents of thyroidectomised and control operated-upon animals a month after operation. Thyroid-feeding, on the other hand, in every case increased the adrenin content above that of the normal animal, and extracts of the suprarenals from thyroid-fed animals gave greater effects upon blood-pressure than similarly prepared extracts from the suprarenals of normal animals.

On Thursday Prof. Bayliss opened the day's proceedings by a paper on "The Mode of Action of Urease." He finds that urease is active in solutions in which it is insoluble, *e.g.* strong alcohol, and therefore acts at its surface by adsorbing urea. Water increases the rate of reaction by mass action or by the intervention of molecular forces in the act of condensation. On this assumption the action of various substances on the rate of reaction may be explained in two ways. The one action changes the degree of colloidal dispersion, and so alters the extent of active surface. Electrolytes show this action either by increasing dispersion and so accelerating the reaction, or by decreasing the surface by aggregation or incipient precipitation and so retarding the reaction. Weak acid and phosphate accelerate the reaction by increasing dispersion; multivalent ions, such as lanthanum, retard the reaction. The other effect may be explained by the substance taking possession of the surface and displacing the urea from it. This is shown by the so-called "surface-active" substances such as amyl alcohol, bile salts, and saponin. Surface energy is depressed and has a negative temperature-coefficient, and Prof. Bayliss finds that the retardation of reaction is greater at low than at higher temperatures. Adsorption of urea by the urease also explains the ratio existing between the concentration of the enzyme and its activity, together with the constancy of the rate of reaction above a certain concentration of the substrate, the latter being due to saturation of the surface. Concentrated solutions of urea greatly retard the action of urease and other enzymes. This is not explained by viscosity or want of water, but is